

REMARKS

This Amendment was prepared with the expectation that it would be filed before action by the Examiner subsequent to the Request for Continued Examination filed on May 10, 2005. Due to the unexpectedly rapid forwarding of the Request for Continued Examination to the Examiner, this Office Action was mailed before the Amendment could be filed. Accordingly, Applicants request withdrawal of the finality of the Office Action, to permit entry and consideration of the present Amendment.

The Advisory Action, and subsequent Final Office Action of May 23 2005, analyzed the Response and the Declaration submitted by Applicant in detail, and made the point that Friese et al does not require the use of lithium, and in fact lithium is notoriously well known in the art as a catalyst poison. Hence, it is alleged that one of ordinary skill in the art would have recognized the desirability of avoiding the use of lithium as a component in constructing a layered sensor.

Notwithstanding the fact that Friese et al clearly teaches that lithium may be used according to the invention, and in fact, is disclosed as being "particularly advantageous" (column 2, line 36), Applicants have conducted a further test to determine if lithium poisoning is actually responsible for the poor performance of the tested sensors. A further declaration under 37 CFR 1.132 is now submitted herewith.

In this declaration, a new gas sensor was prepared with a first layer containing palladium oxide catalyst and a second layer formed from aluminum nitrate decomposed to form aluminum oxide. The sensor was prepared together with a similarly prepared reference bead, and tested using 1% methane in air, in a manner comparable to the testing of the previously

reported sensors.

It was observed that the sensor 4, fabricated according to the Friese et al method but without lithium, also had extremely low sensitivity to the methane, even lower than the example prepared according to Friese et al in which a lithium compound and catalyst were both impregnated into the same layer. Clearly, a different factor is at work here and Applicants believe that the poor performance utilizing the sensors prepared according to Friese et al is due to the catalyst being physically covered by the second layer of aluminum oxide.

According to the invention, it is preferred that the active components in the porous oxide supported catalytic materials in the outer layer be loaded onto the oxide support before coating onto the inner layer. This is clearly disclosed in the specification at page 8, lines 3 through 13. This outer layer in the form of catalytic compound loaded onto a porous oxide is then coated onto the inner layer using a slurry. Applicants believe that forming the gas sensor by this method avoids covering of the catalyst by aluminum oxide, as occurs when an aluminum nitrate solution is used to saturate a previously deposited layer.

In order to better define the invention, Claims 1 and 12 have now been amended to specifically recite a first porous oxide support and a second porous oxide support, and to recite that the supported catalytic compound is coated onto the first layer to form thereby the second layer. This recitation clearly distinguishes the claimed invention from Friese et al in which the outer catalytic compound is never loaded onto a porous oxide prior to coating onto the inner layer. Moreover, Applicants have shown a clear advantageous affect from preparing the sensors of the invention in the manner which is

now claimed.

As to the other points raised in the Advisory Action, an allegation was made that Jones et al teach a "layered configuration" with "additional layers of catalytically active materials and/or an inactive non-catalytic porous material, the latter provided to act as a molecular filter..."

This additional layer as disclosed by Jones et al is, of course, is not a catalytic layer for reacting with catalyst poisons; Friese et al has been cited for that purpose. The problem is that Friese et al does not disclose how to apply such an outer catalyst layer while retaining effectiveness of the device as a gas sensor. Applicants have shown that if one follows the instructions of Friese et al, the result is a sensor which performs poorly.

Jones et al, in an earlier patent (US 4123225) also cited in the present specification, disclose application of an outer layer in the same manner disclosed by Friese et al, from a solution of aluminum nitrate. Applicants have shown that this method produces poorly performing sensors.

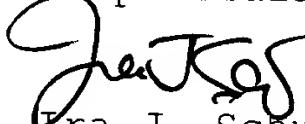
Thus, it is up to one of ordinary skill in the art to determine how to actually obtain sensors with an outer layer of a catalytic material for poisons, which still functions effectively as a gas sensor. Applicants have determined that this can be done by providing a supported catalyst as the outer layer and depositing the supported catalyst on the inner layer. Such a sensor is not suggested by the cited references.

Moreover, the Advisory Action specifically suggests that those of ordinary skill in the art would reject the teachings of the Friese et al reference which clearly is directed to the preferred use of lithium, thereby suggesting that the teachings of the cited references cannot be trusted. If this

is the case, it is even more evidence of the inventiveness of the claimed invention.

Withdrawal of the rejections of record is hereby requested.

Respectfully submitted,



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